3.4D WS Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per \_\_\_\_\_

11-12 Simplify each expression. NO calculator needed.

1. 2. 3. 4. 2

5. 6. 7. 6ln 8.

9. log 20 + log 5 10. - 11. 12.

13-24, Solve each equation. Round your answers to three decimal places if necessary.

13. 14. 15. 16.

17. 3ln(5x)=15 18. 19. 20. 2logx=log9

21. 22. 23. 24.

25-28, Write each expression as a single logarithm. (condense)

25. 26.

27. 28.

29-32, Write each expression as a sum and or difference of logarithms. (expand)

29. ln() 30. 31. 32.

33-36, evaluate and round each answer to three decimal places.

33. 34. 35. 36.